**EVALUATING THE QUALITY OF UNINTENDED PREGNANCY SERVICES AT PKBI CLINIC DKI JAKARTA**



Rista Yunanda1; Martya Rahmaniati1 ; Sabarinah Prasetyo1;

*1Public Health Science, Faculty of Public Health, Universitas Indonesia*

|  |
| --- |
| Corresponding author: Rista YunandaEmail: riztayunanda@gmail.com Received: written by the editor; Revised: written by the editor; Accepted: written by the editor (date of submission, 10pt) |

**ABSTRACT**

Based on WHO estimates, the unintended pregnancy rate in Indonesia is 40/1,000 women aged 15-49 years. PKBI clinic recorded 210 cases of unintended pregnancy from 2022 to 2024. These cases pose significant risks to maternal and child health. The high incidence of these cases necessitates the provision of high-quality services by health facilities. This is crucial to enhance patient satisfaction and improve service access. The objective of this study is to give an overview of the quality services evaluation for unintended pregnancy at PKBI Clinic. This study is a descriptive study using secondary data from the PKBI clinic based on monthly patient visits from 2022 to 2024. The analysis uses a Run Chart and Control Chart. The results of the Run Chart analysis indicate the presence of common causes that remain under system control, whereas further analysis using Control Charts reveals the presence of special causes. These special causes are associated with patient surges at certain times and the impact of health education programs. However, to anticipate patient surges, the PKBI clinic is still lacking in human resources. This study concludes that Control Charts are more sensitive in detecting special causes due to the presence of control limits that can identify out-of-control data and detect small changes. The evaluation of service quality for unintended pregnancies at the PKBI clinic demonstrates good quality, but a lack of human resources can reduce this quality. Therefore, there is a need for additional staff, training, and better management of work schedules.

Keywords:

Quality Improvement; Run Chart; Control Chart; Unintended Pregnancy; Healthcare Service

**Introduction**

WHO found that in 36 countries, 2/3 of sexually active women wish to delay or limit childbirth.1 Nearly 121 million women worldwide experienced unintended pregnancies, according to the 2022 State of World Population report.2 WHO estimates the rate of unintended pregnancies in Indonesia is 40 per 1,000 women aged 15-49 years.1 Data from the Indonesian National Family Planning Board (BKKBN) in 2020 indicated that 17.5% of pregnancies were unintended.3

The risk factors associated with unintended pregnancies include age, residence, wealth index, religion, number of children, family size, cohabitation age, education level, and media exposure.4 Based on data from the PKBI clinic, there were 210 cases of unintended pregnancy from 2022 to 2024. The causes include women who are pregnant not by their spouse, work contracts prohibiting pregnancy for a certain period, premarital pregnancies, and contraceptive failures.

Unintended pregnancies pose risks to maternal and child health, psychological impacts on mothers who are unprepared for childbirth, child neglect, and maternal death due to unsafe abortions. Global data shows that among 74 million women with unintended pregnancies in low and middle-income countries, 25 million undergo unsafe abortions, resulting in 47,000 maternal deaths.5

The high rate of unintended pregnancies necessitates that healthcare facilities provide high-quality services to improve outcomes. The PKBI (Indonesian Family Planning Association) clinic in DKI Jakarta is one such facility offering comprehensive services for unintended pregnancies. PKBI provides counseling and intervention services for unintended pregnancy. PKBI also provides online and offline education aimed at adolescents and women of reproductive age to prevent unintended pregnancies.

Improving service quality is crucial to enhance patient satisfaction. High-quality services can encourage patients with unintended pregnancies to visit the clinic without fear of intimidation. Quality improvement involves a collaborative effort to implement sustainable changes that result in better patient outcomes, system performance, and professional development.

Service quality measurement for unintended pregnancies can be conducted using Run Chart and Control Chart analyses. These tools are instrumental in healthcare decision-making processes, monitoring ongoing processes by showing data variation. A Run Chart is used to observe processes over time with a median value to identify trends or patterns without control limits.6 In contrast, a Control Chart is used to determine whether the observed data is stable, displaying Upper Control Limit, Process, and Lower Control Limit. Stable and controlled variations indicate common causes, while unstable variations suggest the process is out of control, indicating special causes.7 These tools help further identify the underlying causes of variations. Run Charts and Control Charts can be applied to various parameters, including patient visit metrics at the clinic.

The result of the research conducted by Wolfe in 2021, Run Charts allowed for an objective understanding of whether changes made to a process or system over time resulted in random or non-random data, thus monitoring processes to identify trends.6 Another study by Slyngstad in 2021 showed that Control Charts contribute to quality improvement in healthcare by enabling the visualization and monitoring of variations and changes in healthcare processes.7

The objective of this study is to evaluate the quality of unintended pregnancy services using Run Chart and Control Chart methods based on monthly patient visit data, thereby identifying whether the ongoing processes at the PKBI DKI Jakarta clinic are influenced by common or special causes.

**Methods**

This study is a descriptive study using secondary data from the PKBI clinic based on monthly patient visits from 2022 to 2024. The inclusion criteria were patients who visited due to unintended pregnancies and women of reproductive age (15-49 years). The analysis employed includes Run Chart and Control Chart analyses. The sample observation consists of 26 data points.

Quality improvement has the main components measured including collecting relevant data, determining key processes or outcomes, and analyzing the data. Run Chart and Control Chart analyses only show patterns of change, they do not reveal the causes of these changes. Therefore, researchers conducted interviews with the PKBI clinic team to identify the reasons behind the observed patterns.12

Run Chart analysis is a time-series plot using the median as the centerline.6 The steps in creating a Run Chart for the 26 observation points are:

1. Rule 1 Shift: Counting the number of consecutive points either all above or all below the median.
2. Rule 2 Runs: Counting the useful observations, with the number of runs in this study ranging between 9-18 runs. A non-random pattern is signaled by too few or too many runs.
3. Rule 3 Trend: Counting the number of trends, where consecutive data points increase or decrease by 7 points or more.
4. Rule 4 Astronomical point: Counting astronomical point patterns, where data points fluctuate up and down by 14 points or more.8

Control Chart analysis measures the quality of a process by displaying data over time controlled by control limits. A Control Chart consists of a centerline, upper control limit, and lower control limit, set at ±3 standard deviations from the centerline. The Control Chart used in this study is a p-chart because the type of the data is discrete, with countable occurrences and non-occurrences, and has different subgroup sizes.9,10 The steps in creating a p-Chart are as follows:

1. Calculating the proportion of unintended pregnancy patient visits to the total pregnancy patient visits.
2. Reviewing one or more consecutive data points outside zone A or beyond 3 standard deviations.
3. Reviewing two or three consecutive data points outside zone B or beyond 2 standard deviations.
4. Reviewing four out of five consecutive data points outside zone C or beyond 1 standard deviation.
5. Reviewing one run consisting of 8 points on one side of the mean.
6. Counting the number of trends where consecutive data points increase or decrease by 7 points or more.
7. Counting astronomical point patterns, where data points fluctuate up and down by 14 points or more.9,10

**Results and Discussion**

Unintended pregnancy patient visits at PKBI clinic totaled 83 in 2022, 59 in 2023, and 68 from January to May 2024. The total visits over the past two years amounted to 210, with an average of 8 visits per month.

Figure 1 shows a total of 10 runs. The number of runs is between 9-18 runs, indicating neither too many nor too few runs. There are no 7-point consecutive trends either increasing or decreasing, there are no 14 or more astronomical point patterns in the data observations. This indicates that the data variation is random and caused by common factors. Variation is defined as changes in conditions, quantities, or levels within specific limits.9 Random variation is the result of factors inherent in the process and remains within system control.8

The graph shows more visits in 2022 compared to 2023, with an increasing trend in 2024. Based on interviews with PKBI clinic staff revealed that the rising trend correlates with increased awareness among women experiencing unintended pregnancies to seek safe interventions at health facilities. Public trust in PKBI clinics is attributed to the quality of services and effective health promotion programs. Post-COVID-19 pandemic recovery in 2022-2023, PKBI clinic enhancing access to pregnancy services, resulting in increased patient visits in 2024.

Based on the interview, the factors associated with unintended pregnancies include women who are pregnant not by their spouse, work contracts prohibiting pregnancy for a certain period, premarital pregnancies, and contraceptive failures. The high number of visits allows for timely intervention and prevention measures to address these causes and prevent recurrence.

Total Visitor

**Figure 1. *Run Chart* of Unintended Pregnancy Service Visits at PKBI DKI Jakarta Clinic in 2022-2024**

PKBI clinic offers comprehensive services for unintended pregnancies. Each patient undergoes initial counseling by trained counselors to determine whether safe abortion under legal guidelines or continuation of the pregnancy. If the patient chooses to continue the pregnancy, they can place the child in an orphanage, adoption by another family, or personal care. Physical examinations are conducted by doctors and trained medical staff. Unintended pregnancies are a sensitive issue. PKBI clinic's service system avoids patient judgment. They are focusing on providing counseling tailored to the patient's needs. This approach prevents unsafe abortions and ensures proper care for those continuing their pregnancies.

Regarding human resource quality, PKBI clinic employs competent professionals and regularly conducts staff training. A comprehensive service system supported by trained human resources enhances service quality. This aligns with Mosadeghrad's study in 2014, which highlights that healthcare quality improvement involves visionary leadership, proper planning, education and training, resource availability and quality, effective resource management, employee and process quality, and collaboration among healthcare providers.13

As an analytical tool, the run chart has limitations. It is designed for early detection of quality changes over time but cannot confirm process stability. Therefore, Shewhart developed the Control Chart with a mean-based centerline and control limits, providing a more specific and sensitive systematic data analysis. According to Perla's study in 2010, certain healthcare data scenarios use discrete data, making run chart rules more complex. For example, when 50% of the data show absolute extreme values, using the median as the central limit is impractical, therefore it has to use a mean-based centerline as seen in control charts.11 Consequently, the researchers performed further analysis with the Control Chart to identify any systematic data variations.

Figure 2 shows the p-chart results. The p-chart indicates the proportion of unintended pregnancy visits out of the total pregnancy visits. It aims to determine whether unintended pregnancy visits remain within control limits. The results show that observation points 2, 15, 20, 23, 24, and 25 are outside zone A or beyond 3 standard deviations, while points 3, 7, 10, 24, and 25 are two out of three consecutive points outside zone B or beyond 2 standard deviations. Points 25 and 26 show four out of five consecutive points in zone C or beyond 1 standard deviation.



**Figure 2. *Run Chart* of Unintended Pregnancy Service Visits at PKBI DKI Jakarta Clinic in 2022-2024**

The test concludes that the data variation is systematic, indicating special causes.10 This analysis reveals an out-of-control process. Special causes can indicate desirable or undesirable changes in the system.9 Special causes are the result of specific factors that do not occur consistently within a process.

Special causes at the PKBI clinic are indicated by monthly visit fluctuations beyond control limits. For example, the data from January 2024 (observation point 22) to February 2024 (observation point 23), and from April 2022 (observation point 1) to May 2022 (observation point 2) show an increase in visits.

To further analyze these special causes, researchers interviewed PKBI staff. The clinic staff indicated that visit surges occur during specific times, such as post-holiday or pre-new-year periods. Additionally, post-pandemic recovery saw PKBI strengthening health education programs, raising public awareness about accessing healthcare services for unintended pregnancies. PKBI clinic regularly provides information on unintended pregnancy, both online and offline, to teenagers and women of reproductive age, 3-4 times annually.

Health promotion can influence behavior and beliefs, increasing participation in healthcare services. The study conducted by Negin in 2021 found that education and promotion interventions

based on the Health Belief Model effectively improves women's perceptions and behaviors regarding prevention and self-treatment.14

However, PKBI staff indicated that handling patient surges is often challenging due to a lack of human resources, which can increase the workload. This increased workload poses risks in reducing service quality.

PKBI clinic's human resources consist of 1 admin, 1 cashier, 2 doctors, 1 midwife, 1 nurse, and 2 counselors. This number is insufficient to handle sudden patient surges. Absenteeism among medical and non-medical staff also reduces service capacity. Therefore, they need effective human resource management.

The study conducted by Alibhai in 2022 showed that poor pregnancy service quality significantly impacts healthcare service utilization during pregnancy. Poor service includes long wait times and receiving care from unfriendly and incompetent providers, which can result from inadequate service providers, equipment, and process evaluations. When women perceive poor service quality, they may believe that prenatal care is not beneficial, potentially leading them to seek unsafe alternatives, such as illegal abortions or unsafe methods based on mass media information.

According to the study by Omar Ali in 2023 highlights the critical role of human resources as agents of change in organizations. The quality and quantity of human resources can impact clinic performance.

PKBI clinic management should consider increasing human resource capacity, possibly through part-time or contract staff during patient surges. Enhancing training and developing professional competencies can improve efficiency and capacity. Properly managing rest and work schedules is essential for busy periods. Improving healthcare counseling and continuous training can enhance service access. Collaborating with community organizations can reach underserved groups, providing information and support. This approach aims to manage unintended pregnancy visits more effectively and efficiently, ultimately improving service quality.

**Conclusion**

In this study, the Control Chart proved more sensitive in identifying special causes due to control limits that help detect data outside control and small process changes.

The evaluation of the quality of unintended pregnancy services indicates that PKBI clinic’s services meet community needs. Regular health promotion programs have also increased public awareness of the importance of accessing healthcare services.

However, a shortage of human resources may risk declining service quality in the future. The capacity and quality of human resources significantly impact clinic performance. Therefore, interventions should include considering an increase in the number of human resources, employee training, and effective work schedule management.

**References**

1. WHO. Unintended Pregnancy Rate [internet]. 2023 [Cited 2024 June15]. Available from <https://www.who.int/data/gho/data>
2. UNFPA. 121 million pregnancies are unintended- A global crisis. 2022 [Cited 2024 June 15]. Available from <https://indonesia.unfpa.org/>
3. Susilowati. Resiliensi Perempuan De ngan Kehamilan Tidak Diinginkan di Kota Bandung. Jurnal Ilmiah perlindungan dan Pemberdayaan Sosial. 2021; 3(2): 109.
4. Sarder, A., Sheikh Mohammed, S. I., Maniruzzaman, Talukder, A., & Ahammed, B. Prevalence of unintended pregnancy and its associated factors: Evidence from six south asian countries.PLoS One*.* 2021; 16(2). doi:https://doi.org/10.1371/journal.pone.0245923
5. Sikaluzwe, M., Phiri, M., Lemba, M., Shasha, L., & Muhanga, M. Trends in prevalence and factors associated with unintended pregnancies in zambia.BMC Pregnancy and Childbirth*.* 2024; 24(128):1-11. doi:https://doi.org/10.1186/s12884-024-06311-7
6. Wolfe HA, Taylor A, Subramanyam R. Statistics in quality improvement: Measurement and statistical process control. Paediatr Anaesth. 2021;31(5):539-547. doi: 10.1111/pan.14163.
7. Slyngstad L. The Contribution of Variable Control Charts to Quality Improvement in Healthcare: A Literature Review. J Healthc Leadersh. 2021;10(13):221-230. doi: 10.2147/JHL.S319169. PMID: 34531694; PMCID: PMC8439712.
8. Williams E. Understanding Variation: Part1- the Run Chart. Curr Probl Pediatr Adolesc Health Care. 2018;48(7):186-190. doi: 10.1016/j.cppeds.2018.08.012. Epub 2018 Sep 8. PMID: 30205945.
9. Williams E. Understanding Variation-Part 2: The Control Chart. Curr Probl Pediatr Adolesc Health Care. 2018;48(8):202-205. doi: 10.1016/j.cppeds.2018.08.009. Epub 2018 Sep 27. PMID: 30268745.
10. Duclos A, Voirin N. The p-control chart: a tool for care improvement. Int J Qual Health Care. 2010;22(5):402-7. doi: 10.1093/intqhc/mzq037. Epub 2010 Jul 30. PMID: 20675711.
11. Perla RJ, Provost LP, Murray SK. The run chart: a simple analytical tool for learning from variation in healthcare processes. BMJ Qual Saf. 2011;20(1):46-51. doi: 10.1136/bmjqs.2009.037895. PMID: 21228075.
12. Winckler B, McKenzie S, Lo HY. A Practical Guide to QI Data Analysis: Run and Statistical Process Control Charts. Hosp Pediatr. 2024;14(1):e83-e89. doi: 10.1542/hpeds.2023-007296. PMID: 38148740.
13. Mosadeghrad AM. Factors influencing healthcare service quality. Int J Health Policy Manag. 2014;3(2):77-89. doi: 10.15171/ijhpm.2014.65. PMID: 25114946; PMCID: PMC4122083.
14. Negin Niksadat, Mehrnoosh Akhtari- Zavare, Mahmoo d Reza Gohari et al. Effectiveness of a health promotion intervention and education based on Health Belief Model on improving the preventive behaviors of self-Medication among women in Tehran, Iran, 2021. [https://doi.org/10.21203/rs.3.rs-243903/v1]
15. Alibhai KM, Ziegler BR, Meddings L, Batung E, Luginaah I. Factors impacting antenatal care utilization: a systematic review of 37 fragile and conflict-affected situations. Confl Health. 2022;16(1):33. doi: 10.1186/s13031-022-00459-9. PMID: 35690840; PMCID: PMC9188725.
16. Omar Ali, Kristina Krsteska, Dina Said & Mujtaba Momin. Advanced technologies enabled human resources functions: Benefits, challenges, and functionalities: A systematic review, Cogent Business & Management, 2023;10(2). DOI: 10.1080/23311975.2023.2216430